PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

PCT

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL SEARCH REPORT AND
THE WRITTEN OPINION OF THE INTERNATIONAL
SEARCHING AUTHORITY, OR THE DECLARATION

To:

SCIENTIFIC-ATLANTA, INC.

Attn. Lafferty, Wm. Brook

Intellectual Property Department

5030 Sugarloaf Parkway

Lawrenceville, GA 30044

ETATS-UNIS D'AMERIQUE

(PCT Rule 44.1)

Date of mailing *(day/month/year)*	31/08/2006

Applicant's or agent's file reference	FOR FURTHER ACTION See paragraphs 1 and 4 below
F-8121-PC	

International application No.	International filing date *(day/month/year)*
PCT/US2004/038400	12/11/2004

Applicant

SCIENTIFIC-ATLANTA, INC.

1. [x] The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

    Filing of amendments and statement under Article 19:
    The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

    When? The time limit for filing such amendments is normally two months from the date of transmittal of the International Search Report.

    Where? Directly to the   International Bureau of WIPO, 34 chemin des Colombettes
    1211 Geneva 20, Switzerland, Facsimile No.: (41–22) 338.82.70

    For more detailed instructions, see the notes on the accompanying sheet.

2. [ ] The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. [ ] **With regard to the protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

    [ ] the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

    [ ] no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

    Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.

    The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

    Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until **30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

    In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

    See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the International Searching Authority	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL–2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	Katrin Sommermeyer

Form PCT/ISA/220 (January 2004)   *(See notes on accompanying sheet)*

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference F-8121-PC	**FOR FURTHER ACTION**	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. PCT/US2004/038400	International filing date *(day/month/year)* 12/11/2004	(Earliest) Priority Date *(day/month/year)* 13/11/2003

Applicant SCIENTIFIC-ATLANTA, INC.

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of _____6_____ sheets.

[X] It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

   a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

   [ ] The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

   b. [ ] With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. [ ] **Certain claims were found unsearchable** (See Box II).

3. [X] **Unity of invention is lacking** (see Box III).

4. With regard to the **title**,

   [X] the text is approved as submitted by the applicant.

   [ ] the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

   [X] the text is approved as submitted by the applicant.

   [ ] the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the **drawings**,

   a. the figure of the **drawings** to be published with the abstract is Figure No. _10a_

   [X] as suggested by the applicant.

   [ ] as selected by this Authority, because the applicant failed to suggest a figure.

   [ ] as selected by this Authority, because this figure better characterizes the invention.

   b. [ ] none of the figures is to be published with the abstract.

INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER
INV. G06F9/445
ADD. H04N7/173

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 430 570 B1 (JUDGE FRANK P ET AL) 6 August 2002 (2002-08-06) column 4, lines 24,25 column 4, lines 55-59 column 7, lines 12-18 column 13, line 36 - column 14, line 14	1-8,11, 18-25,28
Y		9,10,12, 26,27
X	WO 01/04743 A (SUN MICROSYSTEMS, INC) 18 January 2001 (2001-01-18) page 4, lines 11-23 page 5, lines 12-14 page 17, lines 1-5	1-8,11, 18-25,28

-/--

[X] Further documents are listed in the continuation of box C.   [X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
17 August 2006	31/08/2006

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	Del Castillo, G

5

Form PCT/ISA/210 (second sheet) (January 2004)

page 1 of 2

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category°	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	ANDERSON G, ANDERSON P: "Enterprise JavaBeans Component Architecture: Designing and Coding Enterprise Applications (Sample Chapters)" [Online] 2002, PRENTICE HALL , XP002376621 Retrieved from the Internet: URL:http://www.phptr.com/bookstore/product .asp?isbn=0130355712> [retrieved on 2006-04-11] Chapter "Enterprise JavaBeans Overview", pages 3-4, "Session Beans" section Chapter "The Benefits of Stateful Session Beans", page 1, lines 30-53	9,10,12, 26,27
A	WO 02/079973 A (INTERNATIONAL BUSINESS MACHINES CORPORATION; CLEMENT, ANDREW, SIMON; D) 10 October 2002 (2002-10-10) page 2, line 37 - page 3, line 36	1-12, 18-28
X	WO 99/57875 A (NE-PRODUCTS OY; SAVOLAINEN, KIMMO; PARKKINEN, JUKKA; HUTTUNEN, MARTTI;) 11 November 1999 (1999-11-11) page 6, lines 9-36	13-17
A	SMITH S L, MOSIER J N: "Guidelines for Designing User Interface Software" REPORT ESD-TR-86-278, THE MITRE CORPORATION, BEDFORD, MASSACHUSETTS, USA, August 1986 (1986-08), XP002395090 page 242, guideline 3.5/7	13-17

5

INTERNATIONAL SEARCH REPORT

Box II   Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
   because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
   because they relate to parts of the International Application that do not comply with the prescribed requirements to such
   an extent that no meaningful International Search can be carried out, specifically:

3. ☐ Claims Nos.:
   because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III   Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

      see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all
   searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment
   of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report
   covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is
   restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest   ☐ The additional search fees were accompanied by the applicant's protest.

                             ☒ No protest accompanied the payment of additional search fees.

Form PCT/ISA/210 (continuation of first sheet (2)) (January 2004)

FURTHER INFORMATION CONTINUED FROM   PCT/ISA/ 210

This International Searching Authority found multiple (groups of)
inventions in this international application, as follows:

1. claims: 1-12,18-28

    This group of claims relates to methods for managing memory
(and a corresponding system) with the following features:
(a) when space is needed in memory, applications are removed
from the memory;
(b) the determination of which applications to remove is
based on the application state;
(c) the application state includes "stateless", "stateful
with a state record" and a "stateful with no state record";
(d) applications are removed according to their state in the
following order of priority: first the "stateless", then the
"stateful with a state record" and finally the "stateful
with no state record".

---

2. claims: 13-17

    This group of claims relates to a method for managing
memory, wherein, when space is needed in memory,
applications are removed from the memory, but only after
informing a user and obtaining the user's confirmation.

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
US 6430570	B1	06-08-2002	CN	1265489 A	06-09-2000
			JP	2000250758 A	14-09-2000
WO 0104743	A	18-01-2001	AT	289091 T	15-02-2005
			AU	781357 B2	19-05-2005
			AU	6097300 A	30-01-2001
			CA	2373036 A1	18-01-2001
			CN	1360695 A	24-07-2002
			DE	60018067 D1	17-03-2005
			DE	60018067 T2	28-07-2005
			EP	1194840 A2	10-04-2002
			JP	2003504753 T	04-02-2003
WO 02079973	A	10-10-2002	AU	2002237437 A1	15-10-2002
			CN	1516831 A	28-07-2004
			EP	1374048 A2	02-01-2004
			JP	2004531807 T	14-10-2004
			US	2004078782 A1	22-04-2004
WO 9957875	A	11-11-1999	AU	3608099 A	23-11-1999
			FI	980887 A	23-10-1999

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)* see form PCT/ISA/210 (second sheet)	

Applicant's or agent's file reference	FOR FURTHER ACTION
see form PCT/ISA/220	See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US2004/038400	12.11.2004	13.11.2003

International Patent Classification (IPC) or both national classification and IPC
INV. G06F9/445
ADD. H04N7/173

Applicant
SCIENTIFIC-ATLANTA, INC.

1. This opinion contains indications relating to the following items:

☒ Box No. I   Basis of the opinion

☐ Box No. II   Priority

☐ Box No. III   Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

☒ Box No. IV   Lack of unity of invention

☒ Box No. V   Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

☐ Box No. VI   Certain documents cited

☐ Box No. VII   Certain defects in the international application

☐ Box No. VIII   Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:	Date of completion of this opinion	Authorized Officer
European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	see form PCT/ISA/210	Del Castillo, G Telephone No. +49 89 2399-5996

Box No. I   Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:

   ☒ the international application in the language in which it was filed

   ☐ a translation of the international application into   , which is the language of a translation furnished for the
       purposes of international search (Rules 12.3(a) and 23.1 (b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and
   necessary to the claimed invention, this opinion has been established on the basis of:

   a. type of material:

      ☐ a sequence listing

      ☐ table(s) related to the sequence listing

   b. format of material:

      ☐ on paper

      ☐ in electronic form

   c. time of filing/furnishing:

      ☐ contained in the international application as filed.

      ☐ filed together with the international application in electronic form.

      ☐ furnished subsequently to this Authority for the purposes of search.

3. ☐   In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto
        has been filed or furnished, the required statements that the information in the subsequent or additional
        copies is identical to that in the application as filed or does not go beyond the application as filed, as
        appropriate, were furnished.

4. Additional comments:

Box No. IV   Lack of unity of invention

1. ☒   In response to the invitation (Form PCT/ISA/206) to pay additional fees, the applicant has, within the applicable time limit:

   ☒   paid additional fees

   ☐   paid additional fees under protest and, where applicable, the protest fee

   ☐   paid additional fees under protest but the applicable protest fee was not paid

   ☐   not paid additional fees

2. ☐   This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is

   ☐ complied with

   ☒ not complied with for the following reasons:

   see separate sheet

4. Consequently, this report has been established in respect of the following parts of the international application:

   ☒ all parts.

   ☐ the parts relating to claims Nos.

Box No. V   Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	2-17,19-28
	No:	Claims	1,18
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-28
Industrial applicability (IA)	Yes:	Claims	1-28
	No:	Claims	

2. Citations and explanations

   see separate sheet

Reference is made to the following documents:

D1: US-B1-6 430 570 (JUDGE FRANK P ET AL) 6 August 2002 (2002-08-06)

D2: WO 01/04743 A (SUN MICROSYSTEMS, INC) 18 January 2001 (2001-01-18)

D3: ANDERSON G, ANDERSON P: "Enterprise JavaBeans Component Architecture: Designing and Coding Enterprise Applications (Sample Chapters: 'Enterprise JavaBeans Overview' and 'The Benefits of Stateful Session Beans')" [Online] 2002, PRENTICE HALL, XP002376621 Retrieved from the Internet: URL:http://www.phptr.com/bookstore/product.asp?isbn=0130355712> [retrieved on 2006-04-11]

D4: WO 99/57875 A (NE-PRODUCTS OY; SAVOLAINEN, KIMMO; PARKKINEN, JUKKA; HUTTUNEN, MARTTI) 11 November 1999 (1999-11-11)

D5: SMITH S L, MOSIER J N: "Guidelines for Designing User Interface Software" REPORT ESD-TR-86-278, THE MITRE CORPORATION, BEDFORD, MASSACHUSETTS, USA, August 1986 (1986-08), XP002395090

Re Item IV

The present application does not satisfy the requirements of Rule 13 PCT regarding unity of invention. This Authority considers that there are two inventions covered by the claims indicated as follows:

(1) Claims 1-12 and 18-28: this group of claims relates to methods for managing memory (and a corresponding system) with the following features:
  (a) when space is needed in memory, applications are removed from the memory;
  (b) the determination of which applications to remove is based on the application state;

(c) the application state includes "stateless", "stateful with a state record" and a "stateful with no state record";

(d) applications are removed according to their state in the following order of priority: first the "stateless", then the "stateful with a state record" and finally the "stateful with no state record".

(2) Claims 13-17: this group of claims relates to a method for managing memory, wherein, when space is needed in memory, applications are removed from the memory, but only after informing a user and obtaining the user's confirmation.

The only technical feature that the two inventions have in common is the feature of removing applications from the memory in response to an indication that space is needed in memory. This feature is well-known from the prior art (common general knowledge as well as documents D1 and D2).

The remaining technical features of each of the two inventions are not the same as, nor do they correspond to, features from the other invention, so that no technical relationship can be identified (Rule 13.2 PCT). In fact, these features provide two completely different ways of deciding about applications to be removed from memory: in the first invention, an automatic determination is made which depends on the application state; in the second invention, interaction with a user is required and the determination made depends on the user's choice.

Therefore, the present application does not satisfy the requirements of Rule 13 PCT regarding unity of invention.

Re Item V

(First invention - Claims 1-12 and 18-28)

1 Lack of novelty of independent claims 1 and 18

1.1 **Document D1**, which is considered to represent the **closest prior art** to the subject-matter of **claim 1**, discloses (the references in parentheses apply to this document; the original claim wording is set in italics):

A method for managing memory (column 4, lines 24-25: "Application Manager 24 provides downloading, starting, stopping, querying, and memory management capabilities"), *said method comprising the steps of:*

receiving an indication of application state from a plurality of applications in memory (column 7, lines 12-18: "Once executing, Application Manager 24 records the new running state of the application 26a, 26b, 26c. ... Each entry in the instance list 29a, 29b includes an execution state variable that is updated by Application Manager 24 during the lifecycle of the instant application 26a, 26b, 26c" and column 4, lines 55-59: "Application Manager 24 also allows the querying of application information such as ... what execution state each application instance is in (e.g., "initialized", "executing", "terminated")"); *and*

determining which of the plurality of applications to effect removal from the memory based on the received indication (column 13, line 36 - column 14, line 14: "FIG. 9 is a block diagram of system 500 illustrating the communications between the classes when a low- or no-memory condition occurs during the execution of an instance of an Application 510. ... As illustrated in FIG. 9, an instance ApplBase 514 of a running Application 510 generates 902 an OutOfMemory-Error. ... ApplMgr 502 iterates through its Application cache 52, finding classes which do not have executing ApplBases ... Those Applications without executing ApplBases are instructed 910 to freeMemory() ... ApplMgr 502 then removes 912 those Applications from its application cache ..."; it is observed that in D1 the determination of the applications to be removed is based on the received indication of the application state, as the cited passage specifies that the applications to be removed are those which are not in the "executing" state).

1.2 The subject-matter of claim 1 is therefore **not new** (Article 33(2) PCT).

1.3 For the sake of completeness it is noticed that also **document D2** discloses the subject-matter of claim 1 (page 4, lines 11-22: "According to another aspect of the invention, the application communicates information regarding its state and potential state changes to an application manager ... For example, the application may request that the application manager cause the application to enter the active state. In addition, the application may indicate ... that the application cannot perform the service as requested and therefore has paused or terminated ... Once the state of the application is changed ..., the application may communicate this state change to the application manager" and page 5, lines 12-14: "... Moreover, since the application manager monitors the current state of each of the applications, the application manager may release memory associated with each application immediately upon its termination ...").

1.4 Since system **claim 18** contains only features which correspond to the features of method claim 1, the above objections concerning lack of novelty of claim 1 applies accordingly to claim 18.

2 **Lack of inventive step of independent claim 12**

2.1 Claim 12 includes all the features of claim 1 as well as the following features:
   (a) receiving an indication that memory space is needed;
   (b) the application state includes "stateless", "stateful with a state record" and a "stateful with no state record";
   (c) the order of priority in which applications are removed, according to their state, is: "stateless" followed by "stateful with a state record" and finally by the "stateful with no state record".

2.2 The features of claim 1 and feature (a) above are known in combination from the closest prior art D1 (see passages cited above in the discussion concerning novelty of claim 1). Therefore, the difference between the closest prior art D1 and the subject-matter of claim 12 consists in the definition of the application state and of the order of priority in which applications are removed according to their state, i.e. features (b) and (c) listed above.

2.3 The feature (b) above is known from the prior art. In particular, in document D3, certain software components implementing an interactive session, named "session beans" in the terminology of D3 and corresponding to the "applications" of claim 12, are defined as "stateless" or "stateful" (see pages 3-4 of the chapter "Enterprise JavaBeans Overview"). Furthermore, D3 specifies that a stateful component may or may not have a state record (see page 1 of the chapter "The Benefits of Stateful Session Beans", lines 42-49: "... When resources must be reclaimed, the container serializes a bean's state and copies it to secondary storage. This process is called passivation. When it's time to restore a bean to its active state, the container reads the bean's state from secondary storage and de-serializes the objects. This process is called activation. ... It's not always possible for the EJB container to serialize all state information in a session bean. If an instance variable, for example, does not implement the Serializableinterface, the container cannot save and restore the data. In this case ... the bean developer provides code to reinitialize the bean properly").

2.4 The feature (c) above is not disclosed in document D3, which explains general concepts, but not implementation details such as the selection of the software components ("session beans") to be removed when memory resources are reclaimed. However, in the light of the teachings of D3 and of common general knowledge, the order of priority specified by feature (c) above is considered obvious to a skilled person confronted with the problem of devising a strategy for unloading the components. In fact, D3 mentions that it is less expensive to remove stateless components than stateful components (see chapter "Enterprise JavaBeans Overview", page 4, lines 10-12, related to stateless beans: "... It also means better performance. The EJB container does not have to move stateless session beans from memory to secondary storage to free up resources—it simply regains memory and other resources by destroying the instances" and lines 37-40, related to stateful beans: "... So that conversational state is not lost, the container saves and restores stateful session beans when moving them between memory and secondary storage. All this means that stateful session beans have more overhead associated with them ..."). This teaching of D3 would lead the skilled person to the obvious design decision of unloading stateless components before stateful components. Furthermore, it is clear to the skilled person that removing from memory a stateful component which does not keep a state record is the less desirable of all possibilities,

since the session state would then be lost and the smooth functioning of the system would be disrupted. This simple consideration would lead the skilled person to the further obvious design decision of unloading stateful components with a state record before stateful components with no state record, which should be unloaded only as a last resort.

2.5 For the above reasons, the subject-matter of claim 12 is considered obvious from the combination of prior art documents D1 and D3. It is observed that a skilled person would consider combining the techniques disclosed in D3 with the closest prior art D1, since the "Enterprise JavaBeans" component model disclosed in D3 is a well-known model for programming user-interactive sessions.

2.6 Therefore, the subject-matter of claim 12 does **not** involve an **inventive step** in the sense of Article 33(3) PCT.

3 **Lack of inventive step of dependent claims 2-11 and 19-28**

Dependent claims 2-11 and 19-28 do not appear to contain any additional features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT with respect to inventive step, the reasons being as follows:

- Claims 2-4, 7, 8, 11, 19-21, 24, 25, 28: the additional features of these claims (receiving an indication of application state, providing an explanation to a user) do not produce by themselves any technical effect, in particular with respect to the utilisation of memory resources. They may only produce a technical effect in combination with other features, e.g. the removal of applications from memory. Since the additional features of these claims do not produce any technical effect, no technical problem is solved and, therefore, the subject-matter of these claims does not involve an inventive step.

- Claims 5, 6, 22 and 23: the technique of saving a state record when unloading an application and restoring it when the application is reloaded is well-known and obvious to the skilled person (common general knowledge; see also D2, page 17, lines 1-5 or D3, chapter "The Benefits of Stateful Session Beans",

page 1, lines 30-45). These additional features do not interact in any non-obvious way with the other claim features.

- Claims 9, 10, 26 and 27: since method claims 9 and 10 contain only features which are included in independent claim 12 and system claims 26 and 27 contain only features which correspond to features of claim 12, the objections concerning lack of inventive step of claim 12 apply accordingly to claims 9, 10, 26 and 27.

(Second invention - Claims 13-17)

4 Lack of inventive step of independent claim 13

4.1 **Document D4**, which is considered to represent the **closest prior art** to claim 13, discloses (the references in parentheses applying to this document; the original wording of the claim is set in *italic font*; features not explicitly disclosed in D4 are set ~~strikeout~~; features different from the claim are set underlined):

A method for supporting the management of memory, said method comprising the steps of:

receiving an indication of a user request for a service (page 6, lines 12-14: "In step 402 the terminal examines the different functions of the card ... In case there are several alternatives, the user is allowed to select the function to be used ...");

responsive to receiving the indication, receiving an indication that memory space beyond that which is available is needed (page 6, lines 14-16: "... Next, in step 406, it is checked whether the application required by the selected function exists in the memory of the terminal ...", lines 19-21: "If the application does not exist in the memory of the terminal, next it is checked in step 410 whether the application exists in the management system ..." and lines 26-29: "If the application exists in the management system, the terminal inquires in step 414 about the amount of memory required by the application. Next, the terminal checks 416 whether the amount of memory required by the application is free. If there is not enough memory ..."); *and*

~~providing an explanation that informs a user of the effect of~~ removing an application
from memory to provide the requested service (page 6, lines 29-31: "... an
application to be removed from the memory is selected and it is removed in step 418
in order to vacate the memory for the use of the new application").

4.2 The **difference** between D4 and the subject-matter of claim 13 is that, in claim 13, an
explanation is provided to inform the user of the effect of removing the selected
application from memory.

4.3 The feature of providing an explanation to a user serves merely the purpose of
informing the user, but does not bring about any technical effect, in particular with
respect to the utilisation of the system's memory resources, which the invention aims
to improve. Therefore, as **no objective technical problem** is solved by the method
defined in claim 13, the subject-matter of claim 13 does **not** involve an **inventive
step** in the sense of Article 33(3) PCT.

5   **Lack of inventive step of dependent claims 14-17**

Dependent claims 14-17 do not appear to contain any additional features which, in
combination with the features of any claim to which they refer, meet the requirements
of the PCT with respect to inventive step, the reasons being as follows:

- Claims 14-16: the additional features of these claims, which relate to asking for
  user confirmation before removing the application from memory, do not involve
  an inventive step, as they correspond to the obvious application of a general
  principle of user interface design known to any skilled person from common
  general knowledge (see also D5, guideline 3.5/7 at page 242).

- Claim 17: the additional feature of this claim (losing the application state) does
  not further delimit the subject-matter of the parent claim, since losing the
  application state is clearly a direct consequence of removing the application
  whenever the application has a state.